



SUSTAINING BIODIVERSITY CONSERVATION IN AND AROUND NYUNGWE NATIONAL PARK (NNP)

**Associate Cooperative Agreement N° Aid-696-La-10-00001 under
Leader Cooperative Agreement N° Eem-A-00-09-00007-00**

***Annual Report: 1st March 2011 – 29th
February 2012***

Disclaimer

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LIST OF ABBREVIATIONS

ADENYA : Association pour le Development de Nyabimata (local NGO in Nyaruguru area)

ANICO: Animateur de Conservation

CBOs: Community Based Organisations

CSC: Conflict Sensitive Conservation

DAI: Development Alternatives Incorporation

DEO: District Environment Officer

ECOTRUST: Environment Conservation Trust of Uganda

EWSA: Electricity, Water and Sanitation Authority

FAO: United Nations Food and Agriculture Organization

FONERWA: National Environmental Fund for Rwanda (in pipeline, yet to be officially established)

GEF/PAB: Protected Area Biodiversity Project, supported by Global Environmental Facility (GEF)

GIS: Geographical Information System

GoR: Government of Rwanda

IISD: International Institute of Sustainable Development

INECN: Institut National pour l'Environnement et la Conservation de la Nature

ISAR: Institute for Agronomic Research in Rwanda

JAF: Joint Action Forum (for NNP)

KCCEM: Kitabi College for Conservation & Environmental Management

LEM: Law Enforcement Monitoring

MEMS: Monitoring & Evaluation Management Services

MINAGRI: Ministry of Agriculture

MINALOC: Ministry of Local Governance

MINECOFIN: Ministry of Finance and Economic Planning

MINICOM: Ministry of Trade and Tourism

MININFRA: Ministry of Infrastructure

MINITERE: Ministry of Lands, Water, Forests and Environment (now MINIRENA: Ministry of Environment and Natural Resources)

MIST: Management for Information System

NGOs: Non Government Organisations

NNP: Nyungwe National Park

NUR: National University of Rwanda

PA: Protected Area

PES: Payment for Ecosystem Services

PIC: Partners In Conservation

PMP: Performance Management Plan

PSF: Private Sector Federation

RBM: Ranger Based Monitoring

RBS: Rwanda Bamboo Society

RDB: Rwanda Development Board

RECO – RWASCO: Rwanda Electricity Company – Rwanda Water & Sanitation Company (now EWSA: Energy Water and Sanitation Authority)

REDO: Rural Environment and Development Organization

REMA: Rwanda Environmental Management Authority

R&M Warden: Research & Monitoring Warden

RNRA: Rwanda Natural Resources Authority

RS: Revenue Sharing Program

SACCO: Saving Cooperative (at sector level)

ToRs: Terms of Reference

TTF: Technical Task Force

USAID: United States Agency for International Development

USFS: United States Forest Services

WCS: Wildlife Conservation Society

VSO: Volunteers Service Overseas

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A) EXECUTIVE SUMMARY

This report concerns the activities undertaken in Year 2 (period covered 1 March 2011 – 29 February 2012) of the project “*Sustaining Biodiversity Conservation in and around Nyungwe National Park (NNP)*” implemented by the Wildlife Conservation Society (WCS) as per the approved Year 2 Workplan. The project, funded by USAID aims at building the capacity of the Rwanda Development Board (RDB), the government agency in charge of the management of National Parks in Rwanda, to sustainably manage Nyungwe National park and conserve the rich biodiversity of the Park.

The overriding goal of the project is that Rwanda benefits from the conservation of wildlife and sustainable use of ecosystem services in Nyungwe National Park. The principal objective is to improve the capacity of the Rwanda Development Board (RDB) to sustainably manage the park’s resources and address specific threats (fire, poaching, illegal extraction, etc.) to the park and specific species of concern.

During the second year of implementation, we have been able to build on the work completed in the first year in relation to the 6 major strategies being implemented through this cooperative agreement in a number of important ways:

Strategy 1- RDB's Biodiversity and Threats Monitoring Capacity is Strengthened

A 24-month hand-over of ranger-based monitoring (RBM) and Management for Information System (MIST) to RDB was planned and initiated in the course of the year at the request of the Chief Park Warden. A number of activities were completed related to this including capacity building of key RDB staff to manage this monitoring system and the provision of essential hardware and software at park zone level to speed up the process of RBM data analysis. In a similar vein, a RBM training manual was completed and will now be reviewed- this is also a key step in building the capacity of all park rangers in relation to the application of RBM techniques. Essential field equipment was provided (including tents, sleeping bags, solar field chargers and radios) to strengthen RDB’s ability to conduct multi-day patrols (this will improve patrol coverage). Finally, construction was initiated on the strategically important Gahurizo Ranger Post.

Strategy 2: RDB and Districts’ capacity to manage conflict, mitigate threats and manage tourism is strengthened

In collaboration with the International Institute of Sustainable Development (IISD), park wardens, district representatives and a selection of community volunteers (Animateur de Conservation- ANICO), training was held in conservation conflict resolution and the framework for a conflict resolution strategy for Nyungwe was produced. The 53 member strong ANICO network was also evaluated and revised terms of reference drawn up with RDB for the management and orientation of these community liaison agents. Basic training was conducted for all ANICO, and a system of communication and reporting was also established. Working in collaboration with the US Forest Service, a Fire Management Plan for Nyungwe was finalized and funding is now being sought for its implementation. A number of fire sensitization meetings were convened with local communities and various user groups ahead of the dry season, but luckily no serious fires were reported this year as the weather was wetter than normal. The trans-boundary collaboration continues to grow with regular planning meetings between Nyungwe and Kibira as well as the initiation of coordinated patrols. Nine and half hectares (ha) of ferns are under clearance and techniques to upscale fern clearance are being considered for year 3, in addition, the area of habitat improved through project activities is being monitored through the regular assessment of areas influenced by habitat-damaging illegal activities within the park (fire, mining, encroachment). In the last year we

reported that 3,316ha had been improved through the removal of these illegal activities. This year, we quantified the effect of these activities in a slightly different way by estimating the extent of the area affected by these activities each quarter. Three ex-poacher associations are in the process of being registered and further support is planned. WCS made available a biodiversity expert to work with DAI to undertake a preliminary assessment of tourism impact using the 'Limits of Acceptable Change' approach. WCS will facilitate the training of park staff in the guidelines produced by this consultant in year 3. Dr Amy Pokempner also led a refresher course for all chimpanzee guides and trackers to improve the visitors' experience.

Strategy 3: Strengthening the knowledge and interest of the Government of Rwanda to develop and Support PES policies

The task of developing a national framework to guide PES initiatives is moving forward. Key to this process has been the review of all existing legislation that might link in particular to water-related PES policy development and this work will provide a clear basis for developing a policy brief as a prelude to signing into force focused PES supporting legislation. A second major achievement has been the review of existing Revenue Sharing policy at both national and Nyungwe levels as a means of making more of this important and engaging conservation support tool.

Strategy 4: Develop Payments for Ecosystem Services (PES) schemes

Working in collaboration with scientists from the US Forest Service, our understanding of the hydrological importance and value of sites such as Nyungwe has become clearer thanks to the application of innovative new modelling approaches. The capacity and understanding of key partners in Rwanda has also been enhanced through this process. The Environment Conservation Trust of Uganda (ECOTRUST) has also completed both socio-economic baseline and feasibility studies for the development of small-scale (woodlot) carbon finance approaches and ECOTRUST is now ideally placed to complete project design planning in the course of the next year. This approach may complement a larger-scale funding initiative for Nyungwe based on generating carbon credits that could be sold on the voluntary carbon market linked to the assisted regeneration of fire damaged areas within the park. A training workshop also provided the first opportunity for government, district and educational partners to learn more about methods related to developing carbon-related funding projects in Rwanda.

Strategy 5: Develop Sustainable Alternatives for Resource Use

Working in collaboration with national partner REDO (Rural Environment and Development Organization), 200 pilot households in Bweyeye and Cyamudongo have been identified and provided with a new energy efficient stove of their choice. Over the next 2 years, the impact of these stoves with regards to energy, time saving, etc. will be assessed thorough a baseline survey completed in the course of the year. Baseline information has also been gathered related to the promotion of bamboo cultivation in communities in the Nyaruguru District adjacent to the threatened bamboo forest of Nyungwe. Learning from previous work done by Helpage and others, we will work with key stakeholders to outline a way forward for initiating the distribution and cultivation of bamboo outside the boundaries of Nyungwe National Park.

Strategy 6: Implement Education and Outreach Program

A baselines education and outreach surveys amongst the general population as well as in schools surrounding Nyungwe was completed this year.. Based on the findings, an education and outreach strategy for Nyungwe, providing clear direction on the audiences and expected attitude and value changes that are envisaged as a result of implementing this programme, is being finalized. The strategy

also identified what materials would be most suitable for different audiences. Due to changes in USAID funding, a modification of the award was also initiated in order to drop the literacy/numeracy component from the education component.

B) PROJECT RESULTS

Strategy 1: RDB's Biodiversity and Threats Monitoring Capacity is Strengthened

Building on the successes of year 1, the focus for year 2 was to continue to build essential capacity and management structures amongst RDB staff in Nyungwe. WCS has led research and monitoring activities in Nyungwe for more than 25 years and one of the most important long-term needs is to transfer understanding and ownership of this process to park staff. There is also an urgent need to secure and put in place data management approaches to facilitate easy access and to safeguard many of the long term biological data-sets that continue to be collected.

Summary of targets and progress for Strategy 1 this year:

Work-plan targets	Progress
<i>By the end of 2011, 30 rangers have received training in RBM data collection techniques</i>	<i>52 trained</i>
<i>By the end of 2011, RBM data are collected and entered with minimum errors</i>	<i>Improved data entry observed by RBM managers, RBM reports being compiled more quickly and according to the R&M Warden, with fewer errors</i>
<i>Data management system in place and preliminary results of biological surveys available</i>	<i>Data management system in place in Gisakura and biological survey results under analysis</i>
<i>By the end of 2011 a RBM data management system is in place</i>	<i>RDB manages RBM data in Kitabi</i>
<i>By the end of 2011, RBM training manual is developed</i>	<i>English draft produced. Report to be submitted to USAID for approval and translation.</i>
<i>Patrol post completed and occupied by RDB rangers by July 2011</i>	<i>Construction initiated after lengthy delays for RDB to secure the land.</i>
<i>By the end of 2011, 9 park staffs are trained and able to timely analyse threats monitoring.</i>	<i>9 RDB staff trained as a key activity in handing over RBM responsibilities to RDB</i>
<i>Results from RBM fully used and reflected in quarterly planning activities of different department (Law Enforcement / Park Protection, Community Conservation, etc.)</i>	<i>Done each quarter</i>
<i>RBM results presented in 2 JAF meetings at the park level</i>	<i>Presented to 2 JAF this year</i>
<i>Mechanism for using RBM results for adaptive management adopted</i>	<i>35.2% patrols guided by RDB/MIST by the end of the year. This is increasing over time and reflects an improving attitude towards making better use of RBM data.</i>
<i>Park patrols better equipped and effective communication ensured between field patrols</i>	<i>Tents, sleeping bags and hand-held radio's procured and handed over.</i>

Output 1: Biological Surveying capacity of RDB staff is strengthened

Undertake refresher field training course in biological surveying techniques and RBM data collection and Train WCS and RDB staff in research/survey design, data management and analysis

A number of actions were completed aimed at ensuring that park rangers are able to implement RBM measures in Nyungwe and these will be outlined in subsequent sections of this report. A new intake of park rangers meant that basic training in RBM was also needed this period. In addition, a 24-month hand-over of MIST / RBM to RDB also involved a number of planned capacity building actions, particularly with zone heads and research and monitoring staff.

WCS's Dr. Tim O'Brien visited Nyungwe a number of times during the year to review and suggest how various biological datasets could be analysed. WCS has initiated and maintained a number of long-term monitoring projects over the years related to bird, mammal and phenology monitoring amongst others, and the data collected has become voluminous. The value of such data is tied to its analysis and use of findings in guiding the process of adaptive park management, and so Dr. O'Brien's oversight was planned to allow this process to take place. One of the key expectations of this work is that WCS and RDB will revise their long-term research / monitoring needs based on the application / usefulness of various past monitoring techniques. Given the volume of data that must be reviewed, this reflective process is now likely to take place in the first half of year 3, and based on this essential refresher training for RDB staff on those monitoring aspects that will be maintained will take place.

A report of Dr. O'Brien's initial findings is available on request.

Undertake follow up field trips to monitor quarterly compliance with data collection and entry protocol

These visits were completed each quarter by RDB and WCS staff who visited each of the park's 4 zones (Gisakura, Uwinka, Gasumo and Musebeya) to review progress in transferring RBM responsibility to RDB. . A number of data entry issues were encountered and resolved in the course of these visits, including the need to synchronize RBM databases and the process of replicating data between zone headquarters and the park headquarters.

Design a data management system and put in place a computer lab to centralize data

There has been a clear need to centralize, secure and protect the management of biological data from Nyungwe. Working in collaboration and with the material support of WCS's regional IT experts based in Nairobi, a networked server-based data management system has been installed in the office at Gisakura. This system has a number of advantages including the provision of automatic anti-virus updates, automatic user-based data back-up and the provision of a fire/flood proof data back-up facility that can be removed off site for security.

An improved data management system will be accessible to WCS and RDB and others such as NUR when requested.

Develop training manual for Ranger Based Monitoring

In order to strengthen the capacity amongst all park rangers related to RBM data collection, an English language version of an RBM Training Manual was developed in collaboration with RDB. This manual will be translated into Kinyarwanda and then shared with USAID for review and approval before it is introduced to park rangers through their respective zone heads and research and monitoring staff.

Output 2: The capacity in law enforcement and threat monitoring and assessment for RDB staff is strengthened

Construction of new patrol post at Gahurizo

An essential element of strengthening the management of law enforcement activities in Nyungwe was the construction of a new ranger post at Gahurizo, strategically placed mid-way between Kitabi and Nshili ranger posts adjacent to an area of the park that has traditionally been difficult to reach.



Map showing location of the new Gahurizo Ranger Post between Kitabi and Nshili Ranger Posts on the east of the park

A number of delays were experienced in the course of the year related to securing land for the ranger post. The choice of an initial site within the buffer zone had to be abandoned when RNRA signed a concession with New Forests Company¹ for the exploitation of the buffer zone, and lengthy discussions were then needed with district authorities to secure a second piece of land. The ERF and tender process were eventually completed and construction initiated towards the end of the year.

¹ The involvement of UK-based New Forests Company in the management of the buffer zone is important. Initiating dialogue with this company is crucial in order to explore opportunities and challenges to co-management of the buffer zone. Unfortunately, the company is yet to establish an office in Rwanda and a number of senior managers were also injured as a result of a helicopter crash while undertaking an initial reconnaissance of the buffer zone in the course of the year. Efforts to initiate communication continue at different levels.



Construction work was initiated on Gahurizo Ranger Post

Identify and train 9 additional staff for RBM data management (data entry and analysis)

One of the bottle-necks to effective RBM data management identified at the start of the year related to the lack of capacity amongst RDB staff to manage RBM data (limited to one R&M Warden at the time). The need to train a wider group of RDB staff was therefore prioritized.

This challenge also provided the impetus for detailing a schedule of hand-over of all RBM / MIST related activities from WCS to RDB within a period of 2 years (see below). Progress was achieved on the following activities from this hand-over plan this year:

- Drafted RBM/MIST/GIS manuals / protocols;
- RBM/MIST skills transfer including a) RBM / MIST training for RDB Wardens- Protection & research & monitoring; b) Training at zone level for basic data analysis and transfer to Kitabi; c) Training and provision of solar chargers for GPS batteries; d) Training (mentoring) on monthly, quarterly and annual report production for RBM / MIST; e) Refresher training course on RBM data collection and f) General capacity building for key RDB Kigali staff on MIST/GIS; g) Ensure feedback to rangers on how the data they collect are being used for park management; h) Provide 3 laptops (MIST GIS installed) and wireless modems for basic data analysis & transfer, serial port cables (for PC desktops) and/or serial port adapters for laptops; i) Ensure databases from stand-alone PCs in patrol zones are synchronized with the central MIST database (at HQ) through database replication;
- Participation in quarterly meeting with key partners;

An essential success was related to the training of 9 key RDB staff (mostly Zone Heads) in how to manage RBM / MIST data at zone level. Due to limited prior RDB capacity, before the training there would be a lengthy delay between the submission of RBM data to the R & M Warden in Kitabi and the production of graphs, maps and other outputs that would help interpret RBM findings- an essential step towards implementing appropriate law enforcement actions. These delays often meant that 3 months would go by before RBM data was analysed. Through building the capacity of Zone Heads and other

support staff in terms of undertaking initial data entry and transmission electronically to Kitabi, it was envisaged that the process of adapting law enforcement activities to the situation on the ground could be reduced to 1 month- meaning that within 1-2 weeks at most of the end of each month, RBM findings would have been analysed and appropriate actions taken in each zone. Three databases were put in place at zone level which was then synchronized with the headquarters through a database replication process.

Three laptops, pelican cases and wireless modems were also purchased to facilitate the above process at zone level and by the end of the period some Zone Heads had showed considerable ability and interest in analysing RBM results and providing rapid feedback to their rangers. More needs to be done to bring all Zone Heads to the same level.



Central Zone Coordinator sharing monthly RBM findings with rangers

Additional RBM training was provided for 38 park rangers (including a batch of 24 new RDB recruits) in RBM data collection. The training took place in September 2011 and February 2012 and the objective was to introduce and provide new rangers with skills, knowledge, positive attitude and needed capability related to the use of RBM to ensure effective and consistency of RBM data collection. The training was both classroom and field-based.

Joint (between departments) quarterly planning of RBM activities and Quarterly meetings for joint RBM data analysis and interpretation of the results

Quarterly meetings, as well as ad-hoc discussions were held between WCS and RDB at Kitabi to review RBM activities. Two meetings were held specifically to review progress in the 2-year hand-over process of RBM / MIST to RDB.

Avail RBM results to communities and district officials in Joint Action Forum (JAF)

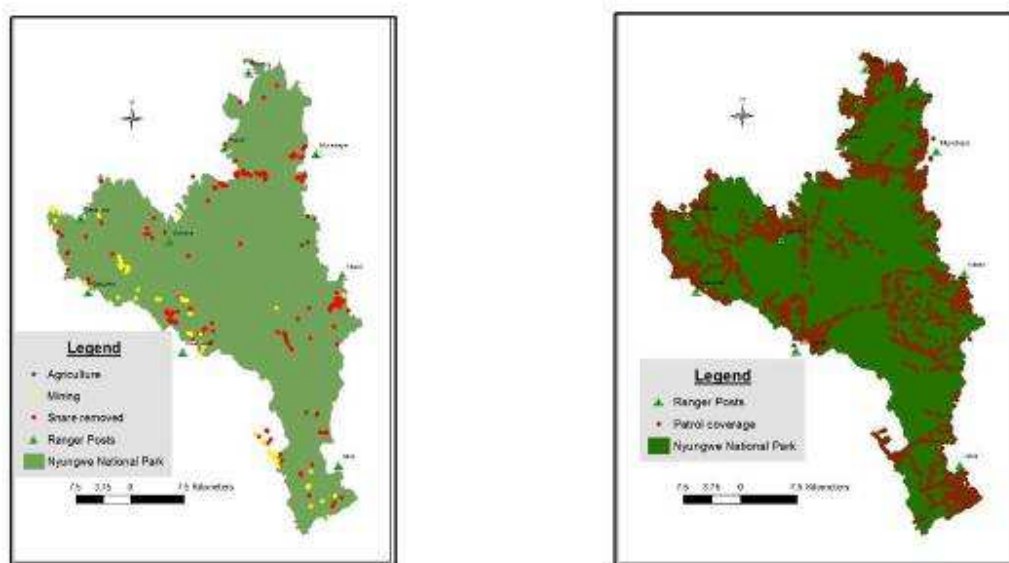
Three JAF meetings were convened in the course of the year one in April, one in November and a General Assembly meeting in May. The meetings of April and November provided an opportunity for RDB to present and discuss RBM findings.

Evaluate the usefulness of MIST GIS system and RBM results in guiding park management (aimed to establish mechanism of adaptive management)

The process of evaluating the usefulness of RBM / MIST as a guide to park management was ongoing throughout the year. That RBM has a place in park management is not in question as RDB requested that RBM / MIST management should be handed over completely to RDB within 2-years. As Zone Heads also increase their involvement in data analysis and start sharing RBM findings with rangers, it is also envisaged that the essential link between RBM analysis and effective law enforcement will be clearer at all levels.

A key element of reviewing the usefulness of RBM / MIST was the initiation of a study to review 5-years of RBM data, a process that WCS initiated this period and which should be completed within the first two quarters of year 3.

The following two MIST maps capture some findings from the last quarter of 2012 and also serve to show the practical value of RBM / MIST in providing information that should lead to improved law enforcement.



Right- Patrol coverage from December 2011 to February 2012 and Left- Distribution map of snare removed, mining and agriculture signs. The mapping of illegal activities and patrol coverage in these ways through the use of RBM / MIST is a powerful visual tool in helping make law enforcement more effective.

Supply of field equipment (70 sleeping bags, 20 radios and 20 tents)

In order to assist multi-day patrols with the present inadequacies of their field equipment, RDB asked WCS to coordinate the purchase of 70 sleeping bags, 16 durable 4-man tents and 20 new and programmed Kenwood hand-held radios. This equipment was ordered and shipped to Rwanda by WCS.

In addition, 5 field solar charging units were also handed over to facilitate the charging of GPS batteries in the field. GPS units are essential hardware used in RBM.



Essential law enforcement equipment handed over to RDB

Strategy 2: RDB and Districts' capacity to manage conflict, mitigate threats and manage tourism is strengthened

An important action for year 2 was the initiation of conflict resolution capacity building in collaboration with the International Institute of Sustainable Development (IISD) based on their approach of conflict sensitive conservation. With high surrounding population densities driving a range of threats to natural resource management, Nyungwe is seen as an ideal location for developing this kind of capacity. The reorganization and strengthening of the Animateur de Conservation (ANICO) volunteer community network was also seen as an important factor also contributing towards greater communication and reduced conflict with surrounding communities.

Summary of targets and progress for Strategy 2 this year:

Work-plan targets	Progress
<i>By the end of the training, 10 participants commit to using at least one of the tools in their work.</i>	<i>100% of Park Wardens participated in this training as well as a cross section of partners. All agreed that they would use the conflict resolution approaches that were shared with them.</i>
<i>By end of 2011, communities are actively engaged in implementing the conflict resolution strategy</i>	<i>19% of key community members trained (from 53 ANICO and 10 District representatives), more community training needed- planned for year 3. Possible</i>

	<i>use of conflict resolution captured by the trained ANICO in their written reports to RDB.</i>
<i>By end of 2nd quarter, draft conflict resolution strategy prepared.</i>	<i>Nyungwe conflict resolution strategy produced by IISD.</i>
<i>By October 2011, conflict resolution strategy being implemented by WCS and RDB staff</i>	<i>Further work is needed in year 3 to involve all RDB staff and more community members in conflict resolution through additional training and follow-up</i>
<i>By end of Year 2, 3 key lessons identified from the implementation of the conflict resolution strategy</i>	<i>Training for all ANICO, park rangers and DEO's delayed, this next step will take place in year 3</i>
<i>At all districts leaders and DEO's have participated in the workshops</i>	<i>50% participated in this first workshop, follow-up training planned with all park rangers, DEO's and ANICO in year 3</i>
<i>Strengths, weaknesses and opportunities for engaging ANICO identified and consensus on lessons learnt</i>	<i>Assessment report being completed and ANICO ToRs revised accordingly.</i>
<i>Training and equipment needs identified for 53 ANICO</i>	<i>All of these actions completed.</i>
<i>53 ANICO have received basic training on park conservation values and threats assessment</i>	
<i>53 ANICO have been involved in study tour in NNP</i>	
<i>Information sharing system operational and effective</i>	
<i>ANICO structure is in place and operational at zone levels</i>	
<i>53 ANICO have basic equipment to facilitate their work</i>	
<i>Information gathered by ANICO is used in RBM</i>	<i>Information being shared by ANICO since September 2011, illegal activity reports followed-up by RDB</i>
<i>By the end of 2011, a draft of participatory fire management is in place</i>	<i>Done</i>
<i>By the end of 2011, 30 rangers have received training on fire fighting techniques</i>	<i>Co-financing from USFS delayed, training therefore delayed</i>
<i>District leaders and law enforcement organs are sensitized and involved in fire prevention and fighting</i>	<i>11 sensitization meetings held</i>
<i>By the end of 2011 at least 3 meetings held with user groups on fire prevention</i>	<i>Done</i>
<i>District leaders and law enforcement agencies are aware of the impact of mining on conservation and involved in fighting and prevention of illegal mining</i>	<i>Information shared in JAF meetings</i>
<i>By the end of 2011, 2 joint patrol organized and facilitated</i>	<i>2 coordinated patrols took place</i>
<i>By the end of 2011, meetings held with each of the 5 Districts surrounding NNP to discuss threat mitigation</i>	<i>Information shared in JAF meetings</i>
<i>At least 3ha of area degraded by past fires restored through assisted forest regeneration</i>	<i>9.5 ha of ferns being cleared</i>

Output 1: Capacity to understand, manage and resolve conflicts is in place

Preparation of training workshop in conflict analysis in collaboration with IISD

The activities under this output were implemented in collaboration with the IISD.

Deliver 2-day training workshop to members of the RDB and District Officers in conflict analysis, introducing participants to a range of tools such as conflict trees, conflict maps, and stakeholder analysis

A two-day workshop on conservation conflict resolution involving 23 participants took place between the 22-23rd September, 2012 involving 5 Park Wardens and 12 representatives from Districts/Sectors/ANICO. Conflict-sensitive conservation (CSC) is conservation programming and implementation that takes into account the causes, actors and impacts of conflict in order to minimize conflict risks and maximize peace-building opportunities.

The objectives of the workshop were: a) to introduce RDB staff and stakeholders to the CSC methodology; b) to identify existing and potential conflicts affecting the conservation of Nyungwe National Park and the surrounding communities, and prioritize those conflicts which require action; c) to analyse the prioritized conflicts; and d) to identify potential solutions through which RDB and its partners can address these conflicts. Two main tools were shared to assist with conflict mitigation- conflict trees and conflict maps.

The findings of the workshop, as well as those from consultations with conservationists and communities, form the basis of the conflict analysis presented below and will contribute to the development of a Conflict Resolution Strategy for Nyungwe National Park.

With WCS staff and partners, conduct a series of community consultations on park-related conflicts

An analysis of park-related conflicts was undertaken with DEO's and those ANICO invited to the workshop and the following mapping of conflict prioritization according to the human and conservation impacts of various conflicts was produced. Further consultation will be central to rolling out the conflict resolution approach to all park rangers and key community representatives in year 3.

The next steps for extending conflict resolution training will involve rolling out this approach to all park rangers as well as key community-based support organs such as ANICO's and other key individuals at District level. No target was set for the number of key community representatives trained in conflict resolution in year 2, but by the end of year 3 we intend that 100% of DEO's and 50% of ANICO's will have been trained.

		Human impacts			
		High	Medium	Low	None
Conservation impacts	High	<ul style="list-style-type: none"> - Crop raiding - Buffer zone management - Artisanal mining - Bamboo cutting - Forest fires - Hunting 	<ul style="list-style-type: none"> - Transboundary conflicts with Burundi - Infrastructure development 	<ul style="list-style-type: none"> - Roads (pollution, accidents, traffic) 	
	Medium		<ul style="list-style-type: none"> - Unequal benefit-sharing - Traditional medicines - Farming encroachment (i.e. for cannabis) 	<ul style="list-style-type: none"> - Increasing number of people in the park - Industrial mining 	
	Low	<ul style="list-style-type: none"> - Firewood collection 	<ul style="list-style-type: none"> - Livestock passage and grazing 	<ul style="list-style-type: none"> - Regional insecurity - Impacts of military presence 	
	None				

Table ranking conservation impact and human impact conflicts in Nyungwe National Park

Organize 1-day follow-up meeting to synthesize results of consultations and develop framework for a Nyungwe conflict resolution strategy; Review and provide feedback on submitted conflict resolution strategy and continued, periodic feedback on conflict-related issues (monitoring of strategy implementation, etc.)

These activities are yet to be completed and will be concluded once further training has been completed in year 3. That said, the 53 ANICO working with the park are submitting regular feedback on the work that they are involved with including their involvement in mediating with communities in relation to conflict and other issues.

From feedback received from ANICO, 4 examples of ANICO being involved with conflict resolution took place this year:

- Bushekeri/Buvungira cells (Nyamasheke) related to illegal trees cutting- This has been an ongoing issue that arises from unclear park boundaries in this area. The Research and Monitoring department and park rangers went down to the area for mapping and ground truthing while the Community Wardens were involved with meeting local leaders. It seems that the area of eucalyptus that is being exploited is outside the park. The next step is that clear demarcation of the park boundary needs to be conducted in this area.
- Ruharambuga/ Ntendezi cells (Nyamasheke) related to illegal mining- This issue is as good as over because of intensive follow-up patrols that have been conducted on a rotational basis from Nyabinjanga. RDB has also intensified intelligence gathering and community awareness campaigns by the Community Wardens
- Bweyeye/Kiyabo cell (Rusizi) related to poaching- This is an ongoing issue and is being followed-up by rangers based in the sector.
- Rangiro/Gakenke cell (Nyamasheke) related to crop raiding- Community Wardens have assessed the issue but have not been in a position to implement any action resulting from the recently passed Compensation Law as yet. The support of the Head of Community Conservation in Kigali is being sought to help develop an awareness campaign related to the new law.

Other progress under this output

An automatic weather station was installed on the summit of Bigugu in November by WCS's Dr Anton Seimon as part of a regional, MacArthur Foundation supported initiative to improve the monitoring of climate change. Training on climate change monitoring is being prepared for year 3 (it was envisaged that this training would have taken place in year 2, but due to conflicting schedules this was not possible).

Output 2: Communities participate in conflict mitigation processes

ANICO are individuals selected from the communities surrounding the park to play the role of liaison / intermediary between the park and their community. Basically the role of ANICO is to help managing the relationship between the park and the surrounding communities. ANICOs for example report to the park management cases of conflict between the park and communities, illegal activities, and cases of damages of people's property by wildlife. ANICO also serves as a channel to transmit conservation messages and other communications from the park to communities, acting as an outreach agent.

In Rwanda, the involvement of local communities has been actively promoted by government since 2001-2002 when ORTPN was restructured and a Community Conservation Department was created. The ANICO approach was launched around Nyungwe in 2002, but lacked direction and a clear mandate and because of that the system gradually collapsed. The structure of ANICO (Animateurs de Conservation) around Nyungwe has resumed in 2010 thanks to USAID support. The re-launching of this approach was seen as a key strategy in improving communication and coordination between RDB and surrounding communities. The ANICO system is structured at cell level with 1 ANICO per cell bordering Nyungwe in 23 sectors and 5 districts. In total, 53 ANICO volunteers were 'recruited' in this way.

Evaluate the effectiveness of ANICO as an approach to conservation; Capacity (training and equipment) needs assessment for Community Liaison Agents (ANICO) and Design and Strengthen the structure of ANICO at zone level

A SWOT-based capacity needs assessment was completed in June and was used to define the next steps required to re-establish and strengthen the ANICO system. The identification of new ANICO members was carried out: 53 ANICO were selected with the support of the park as well as the local authorities.

Based on the above assessment, RDB and WCS elaborated a revised 'Concept for Community Liaison Agents around Nyungwe National Park.' These assessments were used as the basis for planning training for ANICO.

ANICO were also requested to submit reports detailing activities that they had been involved in with local communities and between September 2011 when this system was initiated and the end of February 2012, 22 reports had been received detailing their active participation in promoting park conservation in various meetings, through reporting illegal activities, providing support to those who had experienced human-wildlife conflict, construction of toilets etc.

Training workshops for Community Liaison Agents (ANICOs) on park conservation values, rapid evaluation of threats, techniques of sensitization intelligence gathering for potential threats to the park

Following on from the capacity needs assessment that was completed in June, 52 of the 53 ANICO's participated in basic training related to the following 3 objectives:

1. To increase the awareness of ANICO towards Nyungwe National Park:
 - Park management;
 - Community development program (different projects);
 - Biodiversity and ecosystem values;
 - Threats overview.
2. To ensure that all ANICOs understand and are able to communicate effectively with all those partners/colleagues and communities related to their work:
 - Lines of communication;
 - How to hold public meetings;
 - Communication at times of emergency (fires, illegal activity etc);
 - Simple note keeping and reporting.
3. Identify ways of assessing how the performance of ANICO in supporting park conservation can be measured:
 - Identify indicators of success (No. / type of meetings held by ANICO, illegal activity reports forwarded for action, participation in park meetings etc).

Organize and facilitate a study tour for Community Liaison Agents in NNP

Following the training, the 52 ANICO participated in a field visit to Nyungwe National Park. The tour was used to further build awareness of park conservation activities. Basic reporting equipment was also provided to all the ANICO for their future work.

Hold meetings with Community Liaison Agents (ANICO) and RDB to develop information sharing system

A separate orientation meeting was also held between ANICOs, RDB and Local Authorities to discuss methods of communication and reporting between the various partners in relation to ANICO work.

A reporting template for ANICO was also drafted and shared for comments during this quarter. A final draft was disseminated amongst ANICO and by the end of this reporting period, 12 completed reporting forms had been submitted by various ANICO summarizing their involvement in park conservation related activities and discussions at Sector level.

Provide equipment to Community Liaison Agents

ANICO were provided with basic reporting equipment (exercise books, pens, paper), but the decision to provide boots, phones etc was deferred until the performance of the various ANICO could be evaluated at a later date.

Output 3: Capacity to manage fire, and monitor mining and resource use impacts are in place**Continue the fire management planning process**

Follow up from the January 2011 visit of James Barnett and Tim Murphy of the US Forest Service comprised two main actions. First, following this visit and consultations with stakeholders, a trip report was drafted by the US Forest Service, and commented on by WCS before it was finalized. This report outlined the likely structure of the final Fire Management Plan for Nyungwe National Park. Secondly, the Chief Park Warden (Louis Rugerinyange) and the Law Enforcement Warden (Patrice Nzamuye) were invited to attend an International Wild Fire management conference held in Sun City in South Africa. The Chief Park Warden from Volcanoes National Park was also invited to attend. Louis also benefitted from additional training in Incident Command System based management. Fire warning signs have also been erected with USFS support.

In November 2011, James Barnett and Michael Dardis of the US Forest Service (USFS) spent 10-days with the RDB and WCS staff in order to complete the Fire Management Plan for Nyungwe National Park. The plan includes guidance on fire prevention and community outreach, fire fighting and post fire activities. A 3-year training plan is also outlined using a training of trainers concept. WCS is currently working with the USFS to find support for implementing the Fire Management Plan, something that is being explored with various funders. The plan was also disseminated amongst key stakeholders for their information and comment. The approval of RDB for the plan is in progress.

Training of rangers in fire fighting techniques

Unfortunately, training could not yet be initiated this period as the expected co-financing support of the USFS was delayed.

Facilitate outreach meetings with park managers, local authorities and law enforcement agencies on fire fighting and prevention and meeting with identified illegal resource users (poachers and honey collectors) on fire prevention and fighting

Eleven sensitization meetings were held with Sector officials and especially with those involved with bee-keeping to build support for preventing wild fire propagation both within and adjacent to Nyungwe National Park during June and July. Meetings were held in Gatere sector in Nyamagabe District, Twumba sector in Karongi District, Koaka, Karambi, Cyato, Karengara and Rangiro sectors in Nyamasheke District, Muganza sector in Nyaruguru District and the Bweyeye sector in Rusizi District. A general meeting on this issue was also held with the marginalized / vulnerable groups of the Bweyeye area in collaboration with the two ANICO from that region. Two further meetings were also held in Kitabi and Gisakura with local leaders and members of the security forces in preparation for the dry season. Representatives used the occasion to reflect on their respective roles in relation to fire reporting and fire fighting. Finally, meetings were also held with 2 ex-poachers associations around Nyungwe (Kanyinya and Kabeho Nyungwe Associations) as well in an effort to build awareness and support for fire prevention and reporting.

Organize and support meetings with local authorities and law enforcement organs to discuss ways to tackle the issue of illegal mining.

The issue of illegal mining was raised with local authorities and security organs during the year and joint actions identified to help alleviate this threat. More still needs to be done to build awareness and to secure wider commitment to address illegal artisanal mining, especially in the southern parts of Nyungwe National Park.

Discussions were also held with law enforcement officers (police and army) and they suggested that RDB should report on illegal activities when they occur to allow quick follow up.

Organize and facilitate trans-boundary quarterly joint planning and patrols with Burundian counterparts

This year marked a significant improvement in the coordination of activities with Kibira National Park in Burundi.

In the first quarter, a study tour for INECN staff to Nyungwe was organized, followed by a WCS staff trip to Kibira and Gitega where INECN is based. A work-plan for the year was drafted with INECN.

As a prelude to commencing coordinated patrols, a preliminary meeting to sensitize Burundian authorities took place in the second quarter in Kayanza, Burundi. A number of RDB and WCS staff attended this meeting at which the support and commitment of the Burundian Army was secured. The Army, Police, 9 Commune Administrators and 3 Governors from Kibira's trans-boundary region attended. Both the Chief Park Warden and Head of Law Enforcement from Nyungwe also participated in the meeting and a number of resolutions were agreed upon that would allow such coordinated protection efforts to be initiated- these included an agreement that soldiers would be made available to join patrols on the Burundian side of the border.

Following the meeting held in August involving key security forces in the trans-boundary area in Burundi, a first coordinated patrol took place in November 2011 involving patrol teams from Nyungwe and Kibira National Parks- the Kibira team being reinforced by military personnel. Despite some navigation issues on the Burundi side, both patrol teams were able to successfully complete their trans-boundary patrols with a reasonable degree of coordination and with a number of positive outcomes. The Nyungwe rangers removed 25 snares, demolished 5 poachers camps, encountered 25 mining sites and arrested 4 Burundian miners. The Kibira team also recorded a number of new mining sites and arrested bamboo and wood cutters.

After a de-briefing meeting in the fourth quarter, a second coordinated patrol took place at the end of February 2012. This patrol was remarkable in that it involved the coordination of more than 30 army personnel from the two countries as well as teams of rangers. More than 26 mining sites were discovered and a limited number of arrests made. The next coordinated patrol is planned for May 2012.



Nyungwe's Law Enforcement Warden discussing tactics with the Rwandan Army while on patrol

Hold meetings with District leaders, and law enforcement organs to assess the current threats and develop a coordinated mitigation strategy

Three JAF meetings were held (one was an annual meeting) and in each case District leaders committed to providing greater assistance to Nyungwe National Park in helping control threats such as mining, hunting etc. Assistance was offered in the form of forwarding reports of illegal activities promptly to RDB and sensitizing various stakeholders on the laws governing the park.

Establish, support and monitor key NNP resource users associations

Three Ex-poachers Associations have their registration process underway at present. The files of Twite ku Bidukikije -Uwinkingi Twite ku Bidukikije-Muganza have been submitted to the Rwanda Cooperative Agency and await approval. Kabeho Banda will submit their file at District level for onward transmission to the Rwanda Cooperative Agency. Once registered, WCS intends to further strengthen the link between these associations and existing specialist partners such as Heifer International and Send a Cow in order to further support the livestock husbandry programmes that have been initiated, the expectation being that reduced hunting pressure on the park would be a result through the definition of agreements with these associations in exchange for assistance in livestock raising.

Two joint community-RDB patrols took place in this quarter involving the Kabeho Nyungwe Ex-poachers Association and in Kaninya. 30 snares were removed from areas adjacent to the Banda/Bururi area as a result of the first patrol and a further 55 snares removed as a result of the second listed joint patrol.

Improve ecological conditions in areas that have been affected by wild fires in the past through forest assisted regeneration

The area affected by past wild fires in Nyungwe was previously estimated to be 12% (equivalent to 12,228 ha, Jessica Forest 2004) of the park's total area. A certain proportion of these areas have naturally regenerated, but work by Terra Global Capital, making use of high-resolution aerial photos and followed-up by ground-truthing by WCS has shown that today, roughly 5,000ha can still be seen to be suffering from the after effects of the wild fires that ravaged the park in 1997-8.

Assisted regeneration activities continued with the regular clearance of a number of experimental fern plots. In the third quarter, 3 ha was treated (first cutting of ferns) and a second cutting was conducted on a further 6.5 ha to assist natural forest regeneration in Kitabi, Gasare and Mugote. 9.5ha of previously fern invaded area are therefore being recovered starting this quarter.

Lessons learned from fern clearance are key to elaborating a financial plan for upscaling fern clearance in order to recover wider fire-damaged areas of the park. The possibility of securing carbon-financing on the voluntary carbon market based on this kind of assisted regeneration is being investigated. More cost effective methods of fern removal are likely to be needed to reduce the labour costs associated with this activity.

Output 4: Tourism impact monitoring program supports adaptive management the tourism program

Building on work done by Debby Cox from the Jane Goodhall Institute in 2010 under the DAI's eco-tourism project, and in an effort to assess present capacities and inefficiencies amongst chimpanzees trackers and guides, chimpanzee expert, Dr Amy Pokempner of WCS made use of her time working with project staff on a variety of issues to help organize essential refresher training for chimpanzee guides and trackers.

The training revolved around three presentations, the first geared toward improving the tourist experience, the second regarding health protocol and general conduct in the forest, and the third being on general chimpanzee behaviour and ecology. An assessment questionnaire was implemented to gauge the training and indicated that the refresher training was useful and that participants learned new things - for many this referred to some of the basic facts about chimpanzees such as where they are found and unique behaviours such as warring between communities or using mental maps when foraging. In addition, draft tourist guidelines were developed and shared with RDB based on IUCN/SSC Primate Specialist Group best practices. RDB intends to make use of these guidelines in publicizing primate tourism in Nyungwe.

WCS worked with DAI in a tourism impact baseline assessment conducted using the concept of 'Limits of Acceptable Change (LAC)'. Based on this initial assessment (the report for which is still to be finalized by the consultant), further discussions are envisaged and aiming at elaborating an appropriate tourism monitoring impact system. WCS will then assist with the training of RDB staff in the use of LAC approaches and use of key indicators and standards for monitoring the environmental impacts.

Strategy 3: Strengthening the knowledge and interest of the Government of Rwanda to develop and support PES policies

Activities this year focused on improving coordination, understanding and communication between key organizations involved in developing the frameworks and policies needed to push forward with PES-based payment mechanisms in Rwanda. A review of the regulatory framework governing PES in Rwanda was initiated as a crucial step towards developing supportive national PES policy. Information related to PES best practices and case studies was also shared with PES Task-Force members to broaden understanding on general PES issues. Finally, the programme also contributed towards the assessment and revision of revenue sharing policies which benefit a cross-section of communities who live adjacent to Rwanda's protected areas.

Summary of targets and progress for Strategy 3 this year:

Work-plan targets	Progress
<i>Make a presentation on PES in each of the government agencies in charge of environmental management; Stakeholders are aware of the importance of environmental services, how they benefit from them, and how they can participate in the PES program to obtain a continuous supply of environmental services</i>	<i>Information sharing (CD and presentations) taking place regularly within the PES Task-Force and other fora</i>
<i>Entry point for PES implementation identified by the end of year 2011</i>	<i>Initial policy review draft completed now being further reviewed by partners. The draft identified a number of possible entry points related to water.</i>
<i>Effective mechanism for Revenue Sharing in place for project identification and revenues distribution</i>	<i>Revenue Sharing guidelines reviewed at National and Nyungwe levels. The report is being finalized. .</i>

Output 1: The Government of Rwanda has the knowledge and interest in establishing effective PES policies

Gather, collate and disseminate information and knowledge on PES in Africa and other developing countries

A great body of information and data on PES exists. However as this is a new field for most of the stakeholders, it was estimated important to pull together the most relevant and up to date information related to PES for easy use and access by the different stakeholders. The information compiled was put on a CD and distributed to stakeholders especially people who attended the training workshop on carbon assessment and carbon trading

Review of existing policies, identify gaps and opportunities related to PES development and implementation

Currently, specific PES related policies and legislations are non-existent in Rwanda. As a step towards drafting necessary policy, a consultant was hired to undertake a review of existing legal and institutional frameworks in Rwanda as a guide to developing additional PES policy. The consultant particularly focused on water services, one of the most obvious ecological services that Nyungwe provides. PES for watershed protection was strategically chosen because water is understood and used by all people and sectors. Thus, lessons from its implementations could help shorten the learning curve for other ecosystem services. The consultant's report is currently being reviewed by stakeholders.

Some of the key findings from the draft report include the following:

- The report highlights the main conditions that must be satisfied for the development of a PES approach for the water sector in particular in Rwanda.
- The reports highlights the reasons why the development of a PES approach is valuable, if not essential to Rwanda as a whole given the increasing pressure on natural resources and ecosystem services, many of which are degrading.
- The development of a PES policy and legislation would help harmonize a number of existing somewhat disjointed laws and regulations.

- Given the extreme economic hardship experienced by most Rwandans, it is clear that any PES financing opportunities must demonstrate high potential for poverty reduction, agricultural productivity and resilience and food security, and above all, capacity to reduce loss of Rwanda's critical natural asset- its top soil.
- A number of possible sites were considered as a focus for the possible development of PES schemes, but Nyungwe National Park was chosen as perhaps one of the most suitable.
- A great deal more awareness work is needed to promote the PES approach amongst all key partners and stakeholders.

Organize quarterly PES taskforce/working group meetings

WCS continued to provide technical guidance to the PES Technical Task Force in the course of the year.

Output 2: Assisting RDB in developing a comprehensive revenue sharing policy

Review the current Revenue Sharing (RS) policy and identify gaps, potential areas for improvement and areas of synergies for combining different revenue streams and develop criteria for RS project selection

A review of the revenue sharing system in Nyungwe was conducted to assess the performance of the RS implementation from 2005-2010. This assessment was carried out by visiting a number of past Revenue Sharing Projects, and conducting interviews with several stakeholders to determine the expected impacts of these RS projects on both conservation, livelihood as well as relationship park-population. Consideration was also given to the actual implementation (governance) of RS program, including the RS organs, criteria for project selection, participation of beneficiaries and local authorities, monitoring & evaluation of RS projects, accountability, collaboration and partnership for the implementation of RS projects etc. Based on this, amendments required to increase RS effectiveness and efficiency in compliance with agreed policy guidelines were identified. The report which includes recommendations to improve the revenue sharing system is being finalized.

One of the major outputs of this RS assessment is a reviewed list of clear criteria for RS project selection.

The following are some of the main issues raised by the Nyungwe RS Review:

- The linkage between RS projects and conservation of Nyungwe , especially in terms of how RS funds are allocated;
- Questions related to the kind of projects funded by RS;
- The report evaluates attitudes, understanding, perceptions and support of beneficiaries towards Nyungwe as a result of having received RS funds;

A number of key recommendations are presented in the draft report for the improvement of the RS system. These recommendations will be presented in May to RDB and a wider audience in collaboration with the Greater Virunga Transboundary Secretariat who will also be presenting findings from a similar study that they conducted in Volcanoes National Park.

Strategy 4: Develop Payments for Ecosystem Services (PES) schemes

This year witnessed significant progress being made in the practical evaluation of various PES funding options (both water and carbon related) for Nyungwe National Park in collaboration with a variety of technical partners, foremost amongst which are ECOTRUST who have been evaluating woodlot-scale carbon financing options.

Summary of targets and progress for Strategy 4 this year:

Work-plan targets	Progress
<i>Mechanisms for leveraging private sector interest in PES in place</i>	<i>National PES policy needed. Policy brief under preparation as a prelude to this</i>
<i>The value of Nyungwe watershed services is well understood and communicated to all stakeholders</i>	<i>Workshop held in Kigali with broad spectrum of stakeholders related to modelling and valuation of the Nyungwe watershed. More work needs to be done to produce simple facts for wider audiences, including communities through conservation education and outreach for example.</i>
<i>Key individuals with the capacity to understand, analyze and assess the sustainability of PES projects</i>	<i>Training workshop completed in August 2011</i>

Output 1: Capacity of Rwandans at both the local and national levels to benefit from ecosystem services strengthened

Facilitate and support bi-annual private sector forum meetings on PES around Nyungwe NP

The national PES Task Force requested that further discussion with potential private PES investors should be put on hold until the necessary legal framework has been further developed to support their active involvement. WCS did however have informal meetings with a number of other potential private partners including Heineken in Kigali.

Conduct hydrology studies to model the impacts of land use changes on water quality and quantity flowing from Nyungwe

As part of designing PES for hydrological services provided by NNP WCS requested support from the US Forest Service (USFS) with support from USAID AFR and USAID EGAT to undertake a study on the impacts of land use changes on water quality and quantity provided by Nyungwe. The USFS and WCS are developing a model that will help to assess/evaluate different scenarios of land use changes on the quality and quantity of hydrological services. Our team has been supplying field data on different variables to use in the model such as historic precipitation (monthly), temperature, land use, leaf area index, digital elevation model, population, rainfall erosivity index, soil erodibility, soil characteristics etc.

The model was presented to a cross section of national / regional partners in September 2011 in the course of a 4-day workshop representing an opportunity to bring together watershed and natural resource managers working in Africa to share experiences, gain knowledge, and receive training in novel approaches and tools for analyzing and managing land-use impacts within watersheds. This model is a powerful visual tool that should help convince major beneficiaries of Nyungwe hydrological services as well as the value of investing in Nyungwe forest conservation. The model also allows for the quantification of the flow of water and how it is affected by different land uses- a step towards putting a price tag on water services using different valuation techniques such as avoided costs method.

Below are some of the general workshop findings and also those relevant to Nyungwe:

- Major threats to water resources throughout the region include population growth, land-degradation, sedimentation and siltation as a result of erosion and land-slides;
- Major challenges to watershed management and policy throughout the region include a lack of high quality data on water quality and water quantity, a lack of coordination among stakeholders, etc;
- Results from the models used in the research projects indicate that temperature increases will decrease stream-flow (or water yield) across the countries/case study sites;
- Forests use water, so, forested areas may result in lower water yield than cropland for example, but in some areas, they may still yield relatively high amounts of water (over the long-term) when compared to other land-cover types (these findings were nuanced across the case studies so see specific case study messages below). Factors that determine water yield are complex so the relationship between stream flow and land-cover will be contextually specific. For example, because Nyungwe National Park has high precipitation and low temperature, it may yield more water than a forest with similar amounts of precipitation but higher temperatures;
- Forests in all of the watersheds are very important for controlling soil erosion and sediment loss across all study sites as the models have shown. Model simulations of deforestation in all countries resulted in an increase in soil erosion and sediment loss. This suggests that forests play an important role in regulating water quality throughout the region;
- Representatives from water resource management authorities such as the Basin Authority for the Lake Kivu and the Rusizi River are managing for both water quality and water quantity so land-use management practices must aim to optimize both goals. Of course, both water quality and quantity are important for meeting the many uses of water for people and wildlife throughout the case study countries and region;
- Good, current data on stream flow and sediment loss are lacking generally throughout the countries, including Rwanda. This data is urgently needed to inform the development of large infrastructure projects like hydropower plants on Lake Kivu /Rusizi River;
- Higher quality data and coordinated monitoring systems are needed throughout the region to improve watershed management decisions;
- The USFS supported modelling suggests that, due to global climate warming (temperature increase), stream flow (or water yield) appears to have decreased across Rwanda;
- The Nyungwe National Park has relatively high water yield (30-40% of annual precipitation);
- The Nyungwe National Park has low sediment yield, but deforestation can cause serious sedimentation problems due to high rainfall and steep slopes (as seen in other watersheds dominated by croplands);
- More data and monitoring is needed to estimate local water balance and sediment loading and improve/validate the WaSSI model and reduce uncertainty (evapo-transpiration modelling and Universal Soil Loss Equation parameterization);
- InVest and WaSSI models are useful tools to identify priority watersheds for conservation and management. Site specific data are most useful for model predictions.

As a follow-up to the above, WCS in collaboration with the USFS is planning to collect data that will be useful for the validation of these models. With the support from MacArthur Foundation and in collaboration with Conservation International and REMA, WCS will initiate a 2 year project aimed at monitoring ecosystem services in and around Nyungwe National Park. We will install gauging stations in Nyaruguru district to monitor stream water discharge and climate. The information collected will be used to validate the WASSI model and provide baseline estimates for the economic value of Nyungwe catchment. The varying water inflows and sediments deposited will be used to estimate the economic impacts of land use changes to major water users downstream. These estimates will form the basis for policy makers to consider and ultimately decide upon the payment levels. On the demand side we will identify the major beneficiaries/users of Nyungwe watershed services, assess the current demand on water, prospected future demand as well as existing policies to meet the demand.

The project will draw from the above studies and research in order to develop pilot PES schemes.

Undertake the feasibility study to determine which areas are appropriate for small-holder tree planting as a land use strategy and carbon stock and Identify an appropriate institution and build its capacity to act as a carbon bank for farmers around Nyungwe

ECOTRUST completed three main actions this year with a view to developing carbon projects in rural communities around Nyungwe National Park (Ruhero and Busanze sectors of Nyaruguru District in particular).

First, they completed a biomass assessment to determine the current carbon pools leading to the definition of the project boundaries as well as establishing the carbon baseline. The assessment also identified the potential tree farming systems as well as estimating their growth rates. Secondly, they completed a socio-economic assessment to help to determine the ability of the community to adopt a carbon management scheme. The assessment examined aspects related to the management of a carbon project including land availability, current land use & tenure as well as the willingness of the potential beneficiaries in engaging in the project activities. The socio-economic assessment documented the baseline scenario against which project additionality will be assessed. Thirdly, they completed a feasibility report of the proposed scheme and the desired farming systems that would fit in it as well as an appropriate governance model for such a scheme. The feasibility assessment was conducted around the Nyaruguru District (Kivu, Muganza, Nyabimata & Ruheru sectors). The assessment examined socio-economic aspects, especially land tenure and its implications to a carbon project & desired farming systems as well as biomass aspects of a carbon scheme focusing on the current carbon stocks and estimating the net accumulation potential of desired species in the preferred farming systems.

The report on this work has been drafted, but is yet to be finalized. Results will focus on issues related to land tenure, the likely scale and nature of carbon credits and possible ways of managing the scheme with existing local finance institutions and other partners.

Output 2: Payment mechanisms for ecosystem services established, with an emphasis on watershed services and carbon.

Training workshops on different aspects of PES design and implementation

In support of the development of carbon-related PES schemes in Rwanda and in collaboration with the Technical Task Force on PES, WCS developed a training program on “forest carbon stock assessment for carbon trading” which was held in KCCCEM in August 2011. This training was tailored to the needs of key government agencies’ staff in understanding the basic concepts of carbon projects development and

had 4 main objectives: 1) To introduce to participants technical skills related to forest monitoring, reporting and verification (MRV) as a foundation for carbon financed forest management, conservation and development programs, 2) To raise awareness and understanding of Ecosystems Services and Conservation Finance Mechanisms involved in Carbon Market, 3) To develop and equip the participants with necessary skills that would enable them to develop, monitor, report and verify carbon projects for conservation financing and 4) To empower the participants by building their capacities in conservation finance processes. The training was attended by 22 people from a number of Ministries (MINIRENA, RNRA, REMA, RDB) as well as the National University of Rwanda, Districts around NNP, ISAR, EWSA and ADENYA.

The training resulted in a number of recommendations including the following:

- Study tour to places where carbon projects are implemented (Plan Vivo, REDD or REDD+.);
- Raising awareness of decision makers on climate change and mitigation/adaptation and carbon trading opportunities so they can support carbon projects;
- Training in Remote sensing and GIS related to carbon stocks assessment;
- Training on other voluntary markets than Plan Vivo;
- Training on other ecosystems services than carbon offsetting;
- Training on valuation of ecosystems services;
- Watershed management and payment for watershed services.

Strategy 5: Develop Sustainable Alternatives for Resource Use

WCS views the development of PES markets as key to ensuring the long-term protection of natural resources and biodiversity. However, although these markets will make important contributions, alone they are insufficient to address the growing threats that Nyungwe now faces. WCS plans to identify and introduce sustainable alternatives to natural resource use and contribute to the conservation of this landscape. By employing a range of options, risks associated with a single funding source subject to market vagaries and seasonal fluctuations are reduced.

In year 2, REDO established baselines and moved ahead with the introduction of energy-efficient cooking approaches in 200 pilot households in the Bweyeye and Cyamudongo communities. Work was also initiated to promote the cultivation of bamboo outside Nyungwe National Park to reduce the threat to natural bamboo habitat within the park.

Summary of targets and progress for Strategy 5 this year:

Work-plan targets	Progress
<i>Stove options identified and # of households adopting energy efficient cooking stoves assessed</i>	<i>200 pilot households have chosen from 3 different stove designs and are now constructing energy efficient stoves</i>
<i>Develop an effective mechanism for the planting and harvesting of bamboo from woodlots on a sustainable basis as a way to increase income and reduce pressure on the PA</i>	<i>Background assessment initiated and possibility of building on work completed by Helpage being investigated</i>

Output 1: Improved energy efficiency in villages around Nyungwe from introduction of fuel efficient stoves and alternative fuel sources

Population densities adjacent to Nyungwe are amongst the highest in Africa and the demand for fuel-wood for cooking, heating etc is intense. This has been a traditional driving force for deforestation. While tree planting and woodlots to some extent address the supply side, WCS recognizes the importance of addressing demand. WCS initiated a collaborative partnership with REDO (Rural Environment and Development Organization) to address the problem of fuel wood in the second year of the project by working in collaboration with them to carry out the sensitization and the introduction of modern and efficient cooking stoves.



A newly installed energy-efficient stove being inspected by a REDO staff member

Assess options for manufacture/acquisition of efficient cooking stoves and their distribution in communities around Nyungwe

The activities under this output are being implemented by the Rwanda Environment & Development Organization (REDO) a local NGO specialized in the development of energy saving stoves. Work is focused on two aspects- the piloting of energy efficient stoves in two marginalised communities (Bweyeye and Cyamudongo). These villages have been selected based on the high incidence of tree cutting / domestic fire wood collection and high levels of poverty as indicated by social assessments and RBM results.

Having recruited field outreach staff, REDO representatives met with MININFRA to make a joint decision on the best kinds of energy efficient stove to pilot based on MININFRA's experience from elsewhere in Rwanda. A field assessment of 3 different stoves were then made (traditional, square-mud and round mud) to evaluate fuelwood consumption, cooking times etc and based on the results of these tests and discussion with involved community members, a decision was made on the preferred stoves for promotion in the two target communities.

Secondly, a baseline survey of the 200 selected participating households was largely completed during this period with the following overall objectives:

- To better understand whether fire wood used in households around Nyungwe National Park is collected in the Park or not, and the quantity of fire wood used;
- To explore further the origin of the fuel used in households surrounding Nyungwe;
- To record the population's fuel preference in the two surveyed sectors;
- To examine the economics of fuel provision.

The baseline survey provided information against which the pilot introduction of stoves can be analysed.

Thirdly, a number of stoves were constructed in selected households in each sector so that local populations could better understand the construction process. The process of constructing the 200 pilot stoves (100 in each sector) is now underway and is being led by a trained and supervised team of 5 local women.

Output 2: Creating Incentives for Reducing Illegal Bamboo Harvesting

The Nshili area in the southern portion of Nyungwe National Park is dominated by bamboo forest, a unique and important habitat that provides refuge to a number of species of conservation importance including the Owl-faced monkey (*Cercopithecus hamlyni*). The illegal extraction of bamboo poses a threat to this habitat and is driven by a trans-boundary trade. Bamboo is under increasing demand because of its use for toothpicks, meat skewers and various artisanal products.

The aim of this output is to promote the sustainable cultivation of bamboo in key locations adjacent to the park through collaborative community mechanisms that reduce the pressure of exploitation on natural bamboo within the park. In the course of the year, information was collected that will assist with planning how managed bamboo cultivation can be promoted.

A series of activities were outlined within the year 2 work-plan related to the general promotion of bamboo cultivation by local communities as an alternative to illegal bamboo harvesting within the park. These consisted of:

Identify/assess local needs in bamboo; Select appropriate species that best satisfy local needs; Assess potential environmental impact of using selected species; In collaboration with farmers and district leaders identify areas that are suitable for bamboo planting; Work with Rwanda Bamboo Society (RBS) to facilitate access to seedlings and Develop contracts with farmers to initiate creation of plantation(s) of bamboo

A basic assessment of bamboo cultivation possibilities was made. Nationally, it is estimated that roughly 20 NGO's exist that are in some way playing a role in the promotion of bamboo cultivation. In the Nyaruguru District adjacent to Nyungwe, Helpage, with the previous support of GEF/PAB were involved in bamboo promotion in the Muganza and Ruheru sectors. They helped communities form cooperatives and distributed roughly 6,000 bamboo seedlings to farmers.

It seems that the above approach was not altogether successful because bamboo was planted amongst crops and for that reason was often neglected. As a next step, additional information needs to be collected from farmers, Helpage and other Cooperative members to learn from the work previously done and based on this, an improved model for bamboo cultivation will be outlined.

There is a clear demand for bamboo in the Nyaruguru District. For example, the established and new tea estates of Nshili and adjacent areas are responsible for the demand for woven bamboo tea-pickers baskets. The national demand for tooth picks and meat skewers also appears to be growing. A market-

chain analysis of such issues will be completed following discussions with key bamboo stakeholders in the early part of year 3.

Strategy 6: Implement Education and Outreach Program

Education and outreach activities implemented this year centered on completing baseline surveys for the two main strategy audiences 1) Schools and 2) Communities (and especially target groups involved in unsustainable behaviours). An education and outreach strategy also is being finalized based on the findings of these assessments. Meetings with key stakeholders also provided the opportunity to make decisions on the kind of materials that would have the greatest impact based on their respective likely costs.

The implementation of our education and outreach programme is being supported by national NGO ARECO who are a sub-grantee under this cooperative agreement.

The Education and Outreach component of the project progressed less quickly than initially envisaged due to the necessary time it is taking to establish all relevant baselines on which long-term intervention strategies will be based, nevertheless, substantial progress was made. The focus of this year was on gathering information about the target audiences to better understand their habits and preferences (to design the most appropriate means of communication) and to establish baseline levels of knowledge, attitudes and behaviours for two reasons. First, knowing the current level of knowledge and attitudes helps us to design activities and tools which address knowledge gaps and promote appropriate attitude shifts rather than ‘teaching’ people what they already know or promoting values which are already common within the community. Secondly, knowing the current levels of knowledge, attitudes and behaviours provides us with the baseline against which future evaluations can measure impact with respect to the agreed indicators.

This in itself is a major achievement and strength of the project relative to many conservation education and outreach initiatives which tend to implement activities first and then consider their audiences, objectives and evaluation criteria second. It is our aim to ensure that the current project stands as a model conservation education and outreach strategy and we will, therefore, take the time necessary to ensure that the foundations for Years 3- 5 of this project and beyond are in place before moving to produce materials and implement further activities.

Summary of targets and progress for Strategy 6 this year:

Work-plan targets	Progress
<i>By the end of 2011, school baseline is conducted in ten schools (2 schools/district)</i>	<i>Done</i>
<i>Outreach strategy and work-plan on formal education developed and produced by May 2011</i>	<i>Education and outreach strategy completed and was presented to a cross-section of education stakeholders in December 2011 and in March 2012</i>
<i>The existing levels of knowledge and current attitudes for out of school youth and other vulnerable populations is known in 5 districts around NNP</i>	<i>General baseline completed</i>
<i>Work plan and education strategy for target community groups based on survey results developed and in use</i>	<i>Education and outreach strategy for target community groups completed and workplan for conservation education activities developed in collaboration with partners</i>

Output 1: Students in formal education (primary and secondary) will adopt a positive/supportive attitude

Conduct and analyze baseline survey to measure existing levels of knowledge and current attitudes and behaviors for school students.

A baseline education survey for schools was completed in the third quarter in 10 schools (5 of them selected from the 10 pilot schools, and a further 5 control schools) with the support of ARECO.

The survey involved 200 students from Primary 3 to Senior 6² levels- the methodology for this survey was elaborated with the assistance of the WCS Education Dept. in New York. Following the initial training of 5 'Enumerators' (recruited to work with ARECO on administering the survey) as well as piloting a draft of the questionnaire with 40 students, the survey was conducted with 200 students from P3 to S6 levels over a 3-day period in October. Data was entered into SurveyPro software (as used in the previous General Education and Outreach survey)

The survey consisted of six parts:

- 1) Introduction – collecting demographic information
- 2) Animal pictures – naming animals and choosing which are found in NNP
- 3) Knowledge questions
- 4) Attitude questions
- 5) Behavior questions
- 6) Discussion: What students have done, or can do to protect NNP

Some general conclusions from the survey include the following:

- Overall, the baseline survey shows that responses from control and experimental subjects show no systematic differences between them. This will enable us to see impact of the education/outreach activities when we compare responses from the follow up study done after implementing education/outreach interventions.
- Students generally know the status and rules of Nyungwe, but could use more detailed information about what makes it valuable. They lack specific animal information, which should be supplied in the education/outreach interventions. This is particularly true about chimpanzees, one of the most important species for Nyungwe (both ecologically and economically through tourism).
- Students' sense of responsibility towards protecting Nyungwe should be supported and instilled at a young age.
- Most students indicated low levels of participation in threat behaviors to Nyungwe (cutting bamboo, setting fires, and hunting). They should be encouraged to continue staying away from or to stop these behaviors, and to encourage others to do the same.
- Although some students have ideas or have acted to help protect Nyungwe, this is an area which the Education/outreach program should emphasize. During the education/outreach activities, students should be exposed to different ways they can help protect Nyungwe Forest. They should see demonstrations and participate in these activities, learning the reasons these activities help Nyungwe and increasing their caring attitude, and sense of responsibility and empowerment.

² Often referred to as P3 to S6 level in Rwanda (P3 is equivalent to US 3rd Grade)

More schools could start environmental clubs, with new and existing clubs highlighting Nyungwe information and activities.

Use survey results to finalize education and outreach strategy and develop formal education work-plan (which defines materials and activities)

The education and outreach strategy was finalized based on the findings of the baseline study. The strategy outlines the threats, audiences, values and attitude targets for different education and outreach audiences.

Design and produce conservation education materials and activities for use in formal education, including pilot testing with sample groups of teachers and school students (October 2011)

The first step in producing education materials for use in formal education was the completion of the education strategy referred to above. With a clearer understanding of the audiences and messages, a workshop was then convened in December 2011 with 27 representatives of various education partners (RDB, school representatives, district representatives, NGO partners, ANICO etc) to both outline a workplan and also agree upon the most applicable, impactful and cost-effective education materials that could be produced.

Participants explored different Conservation Education & outreach materials and activities, and brainstormed their own ideas for Rwandan audiences near NNP. In five teams representing different target audiences (poachers, honey collectors, bamboo cutters, students and general community including influencers), participants thought about appropriate materials/activities and messages for their assigned group. Each group presented its ideas and the larger group discussed each target audience in turn.

On the second day, these lists were compiled and short-listed. Items were scored on three criteria:

- 1) Reach for different audiences
- 2) Practicality: How feasible, easy to make ourselves, and cost-effective
- 3) Impact: Number of people who will be exposed to the message.

The highest ranking materials were drama, competitions, posters/stickers, radio, church and songs/poems (see below).

Material/Activity	Reaches 5 audiences	Practical	Impact	TOTALS
Drama/sketch with masks	5	4	3	12
Competition	4	4	4	12
Posters/stickers	5	3	3	11
Radio	3	3	5	11
Church	2	4	5	11
Songs/Poems	3	4	3	10
Group discussion	2	4	3	9
Films	4	2	2	8
Football match	1	3	4	8
Photos	1	3	3	7
Handicrafts	1	4	2	7
Study tours	1	4	2	7
Clothes	2	2	2	6
Notebook	2	2	2	6
Playing cards	1	3	2	6
Stories (literature/text)	1	3	2	6
Calendar	1	3	2	6
Map	1	3	1	5
TV	1	1	1	3

The production of various materials for use in schools will be initiated in year 3. A series of educational posters, school-based drama and art competitions and the possibility of working with local / national radio stations are all being investigated. Teacher / educator training will follow.

Output 2: Out-of school youth and other vulnerable groups, will gain new skills and an increased understanding of the multiple values of NNP, adopt a positive/supportive attitude to park conservation efforts, and therefore reduce destructive behaviour.

The focus for the general education and outreach campaign was those sectors of local communities that are most involved with activities that threatened the integrity of Nyungwe National Park as well as influencing groups (who play an important role in the community, and whose involvement could help in reducing threats) in local society.

An essential first step was the establishment of a broad education and outreach baseline amongst the communities living adjacent to the park.

Conduct and analyze baseline survey to measure existing levels of knowledge and current attitudes, and collect baseline data on behaviors (from other sources), for out-of school youth and other vulnerable populations

A baseline survey on knowledge, attitude and behaviour was conducted in the five districts bordering NNP, 13 sectors, 26 cells. 390 households were interviewed: 52.7% of respondents were male, and 47.3% female. To conduct the survey, 13 enumerators were hired, trained and supervised by RDB and WCS community conservation staff. After collecting data, 2 assistants were employed for computer data entry under the supervision of the WCS Education Officer.

A consolidated report was produced for the general education and outreach survey. Some of the key points highlighted in this report are as follows:

- Schooling was limited for many of the respondents;
- Levels of literacy and numeracy were generally low;
- Household incomes are low for most respondents;
- Radio is likely to be the best means of disseminating information to large numbers of people;
- Community meetings and music may serve as further conduits for information sharing;
- There is a reasonable base of knowledge related to NNP, its threats etc and a good level of support for the protection of NNP;
- More awareness is needed on the values of NNP;
- Indications as to the severity of different threats were gathered;
- There is limited discussion amongst community members related to threat mitigation, but more needs to be done;
- There is widespread support for upholding the laws of NNP;
- There exist good levels of support that community members should seek for alternatives to hunting and other illegal activities and a belief that this can be achieved easily.

Use survey results to finalize education and outreach strategy and develop work-plan for out-of-school youth and other vulnerable populations (which defines materials and activities)

The education and outreach strategy was finalized based on the findings of the baseline study. The strategy outlines the threats, audiences, values and attitude targets for different education and outreach audiences.

Design and create integrated conservation and literacy/numeracy materials and activities for use in literacy/numeracy programs, Hold training of trainers and provide materials of literacy/numeracy programs and Initiate new literacy/numeracy training and support existing programs

An assessment of general literacy/numeracy issues and suggested guidance for WCS was produced by a consultant in year 1. In addition, some literacy/numeracy baselines were also captured during the education and outreach survey completed in quarter 1. This information points to the fact that the low levels of numeracy-literacy in the general population surrounding Nyungwe needs to be taken into account of when designing outreach materials and messages.

Design and produce conservation education and outreach (social marketing) materials and activities for communities near NNP

The first step in producing education materials for use in formal education was the completion of the education strategy referred to above. With a clearer understanding of the audiences and messages, a workshop was then convened in December 2011 with 27 representatives of various education partners (RDB, school representatives, district representatives, NGO partners, ANICO etc) to both outline a workplan and also agree upon the most applicable, impactful and cost-effective education materials that could be produced.

The outcomes of this meeting in terms of preferred material formats etc are explained earlier under the school education section.

The production of various materials for use in target community groups will be initiated in year 3. A series of educational posters, community-based campaigns, competition and the possibility of working with local / national radio stations are all being investigated.


C) DISCUSSION OF PROJECT RESULTS

A number of unexpected challenges had to be faced during the second year of project implementation, these included the following:

- **Gahurizo construction process:** The process of RDB securing land for the construction of the Gahurizo Ranger Post took far longer than expected due to contractual changes in management related to the buffer zone of Nyungwe National Park. These issues were eventually resolved when Nyaruguru District agreed to release land near the Vubiro Peak area of the park and construction was initiated before the end of the year.
- **WCS staff turn-over:** There were two changes; Mr Karangwa Charles, the former Sustainable Conservation Finance Manager resigned in April 2011 and was immediately replaced by Mrs Mediatrice Bana, freshly graduated for MSc studies in Geo-information Science & Earth Observation, University of Twente, Netherlands. Media's past 7 years experience in conservation, combined with her recently acquired skills and competencies will be of great value for WCS program, particularly the USAID supported activities. Secondly, our Community Outreach Manager Innocent Buvumuhana left the project. A Kenyan VSO was taken on, Eugene Lusweti to support the further development of our education and outreach programme.
- **Fire Management Planning follow-up:** Despite the success in completing the process of developing a Fire Management Plan for Nyungwe, funds have not yet been secured to implement this plan. The training and organization of both park staff and community members is a priority. WCS is actively investigating various funding options at present.
- **Higher political support for trans-boundary collaboration:** The overall future of trans-boundary collaboration will be greatly strengthened by the ministerial ratification of the 10-year trans-boundary strategic plan (2009-2018) which was drafted by RDB and INECN (Institut National pour l'Environnement et la Conservation de la Nature). Discussion is being held to see how this can take place as soon as possible.
- **The need to review the project PMP:** Over the course of the first two years of cooperative agreement implementation the need to revise the project PMP has become clear as a number of approaches and actions specified in the original Cooperative Agreement have evolved. With this in mind WCS has been working with USAID and MEMS to complete this process. The revision of PMP initiated in July 2011 was not completed before the end of the year. We were not therefore able to report against PMP targets, but this will be done in future reporting.

SUCCESS STORIES


Two success stories were submitted in the course of this year's reporting. The project will continue to submit success stories with quarterly report as per the agreement.



SUCCESS STORY

PES training paves way for new projects in Rwanda

USAID support's Rwanda's first training course in carbon measurement methodologies, monitoring and carbon project management



Trainers from various government agencies undertake practical training in soil carbon assessment.

"The whole Rwanda Natural resources Authority's team should receive this very important training to gain knowledge in carbon trading; this is another way of reducing poverty and conserving sustainably our natural resources."

With the 2011 climate change conference in Durban (COP 17) just a few weeks away, the need to secure a new global climate change agreement as well as ratification of various possible funding mechanisms to alleviate global warming are high on the agenda.

Although the government of Rwanda is developing its own policies to address climate change and land degradation, there are simply not enough trained staff within government agencies and research institutions with the required skills and experience to move things forward quickly.

From August 15th to 25th 2011, a training workshop on "Carbon stocks assessment and monitoring in different land uses for carbon trading" was organized at the Kibira College for Conservation and Environmental Management. The 10-day training was organized by the Wildlife Conservation Society in collaboration with RBMA and ROB and targeted 22 key staff from various government agencies, Districts surrounding Nyungwe National Park, research institutions and civil society.

With training inputs from experts working in Uganda (ECOTRUST and WCS) and Rwanda (The National University of Rwanda), participants were trained in both the theory and practical methods related to assessing forest and soil carbon levels, and were guided through the stages of using this information to design projects that might be funded under the various funding mechanisms that currently exist.

At the end of the training, participants overwhelmingly acknowledged that the training had been essential in helping them understand the critical role of forests in climate adaptation and mitigation and the different steps of developing carbon markets. Rwanda now has a core of newly trained experts which should act as a foundation to develop and implement carbon market projects.



FIRST PERSON

Improved monitoring supports park protection

Improved ranger-based monitoring for Nyungwe National Park in Rwanda.



Nyungwe National Park Central Park Zone Coordinator Innocent Ndagijimana discussing ranger-based monitoring results with park rangers.

"Previously it took 2-3 months before I could share patrol information with my rangers, now I can do this on a monthly basis and improved park protection is sure to be the result."

Innocent Ndagijimana coordinates the work of 21 rangers from the 'Central Zone' of Rwanda's Nyungwe National Park. He is responsible for park protection and must mobilize his ranger force to combat illegal activities including hunting, artisanal mining for gold and other activities that threatened the wildlife and habitats of one of the Rift Valley's most important protected areas.

In 2010, USAID started supporting the improved monitoring of protection activities in Nyungwe through what is known as 'ranger-based monitoring' (RBM). RBM involves park rangers capturing geographical information on wildlife and illegal activities as they patrol the park. This data is then analyzed using special software called MST (Management Information System). MST produces maps and tables that show where patrols went and what they found.

Innocent says that park rangers have benefitted from the convening of a number of RBM training courses, and the provision of equipment that is helping him and other Zone Coordinators to download and analyze patrol data in the field which allows for quick, adaptive and effective patrol planning with rangers stationed around the park.

The RBM-MST monitoring approach allows for the effectiveness of park activities to be continually assessed and this is being done with reference to baselines established in 2009 before USAID support became available. In Innocent's words, this is crucial because "it is very important to protect our NP because we do this for the local people. The park is a source of water and clean air and so many other resources that we must manage for the benefit of local people and the whole of Rwanda and for future generations. They must not be overruled by those who practice illegal activities."

D) COMPLEMENTARITY WITH OTHER DEVELOPMENT PROGRAMS

In the course of the last year, activities funded through the implementation of this cooperative agreement have complemented other approaches being implemented by WCS and other partners in Nyungwe in the following ways:

- PAB, a GEF funded project of which WCS was a partner until December 2011, supported various conservation activities in NNP. Working with Helpage, PAB supported the promotion of bamboo cultivation in the Nshili area, a project that we are hoping to learn from. PAB also supported the process of developing a Project Design Document (PDD) for an assisted regeneration carbon financing project for Nyungwe which we hope will be the foundation of recovering the extensive fire damaged areas of the park. PAB supported work with user groups around Nyungwe such as bee-keepers. PAB also provided essential support for the revision of the management plan for Nyungwe, a process that is nearing completion.
- WCS established contact with AKAZI KANOZE to review the possibility of working together to empower the youth sector of local communities through focused capacity building on entrepreneurship and business management. AKAZI KANOZE completed a field assessment of possible areas of collaboration and are now working with WCS to develop a training programme focused on young bee-keepers from around the park.
- The trans-boundary collaboration with Kibira National Park and INECN in Burundi continues to grow. This work is primarily being supported by the US-based John D. And Catherine T. MacArthur Foundation, but USAID is also providing important support to joint planning. In the course of this year, we have completed the renovation of park HQ buildings, purchased essential field equipment and have developed capacity amongst park rangers to use RBM as a monitoring tool. We have also most importantly initiated coordinated patrols with Kibira and this is sure to have a positive impact on tackling illegal trans-boundary activities such as mining, poaching and bamboo extraction.

- WCS has continued working with Partners in Conservation (PIC) especially to further develop the bee-keeping work around Nyungwe. The construction of a processing and storage facility for improving the marketing of honey products has been initiated, a bee-keeping training manual developed and work is now needed to strengthen the role of the Beekeepers Union in particular. Ubuzima honey also won the MINICOM 2010 Best Product award at a national trade-fair in the course of the year.
- WCS is collaborating with the US Forest Service (USFS) on a number of initiatives. The USFS has funded the development of a Fire Management Plan for Nyungwe and is also providing guidance and support on the valuation of essential ecosystem services in relation to hydrology in particular with non project USAID-linked funding. The project will support activities related to organizing communities to participate in fire management activities in year 3 onwards.
- Finally, WCS worked closely on a number of activities with the USAID supported “Nyungwe Nziza” project, implemented by Development Alternatives Incorporation (DAI) and aiming at strengthening the sustainable ecotourism in and around Nyungwe National Park. Examples of areas of collaboration include chimpanzee tracker refresher training, tourism impact assessments and the development of concepts related to the construction of rest-stops on the main road within Nyungwe.
- WCS also partnered with the ‘Bright Light Foundation’ to pilot two different solar lamp / charging units in two communities adjacent to Nyungwe (Cyamudongo and Bweyeye).

E) TRAINING

In the course of the Y2 of the project, a number of training activities were organised for both government institutions (especially RDB) as well as local communities. The following is the table providing details of these trainings as well as the numbers of participants:

Topic	Objectives	Expected Results	Beneficiaries	Attendees			
				Total	F	M	Youth
Fire fighting campaign with NNP user associations/ communities	To build awareness and understanding related to the risks to Nyungwe posed by fire	Reduction in fire risk and prevalence around Nyungwe	~800 community members from Gatare, Twumba, Karambi, Cyato, Muganza and Bweyeye	804	360	444	-
Training on MIST GIS for Ranger-based Monitoring data analysis	To build capacity related to the remote analysis of RBM data at zone level	Reduced time for the analysis of RBM data (from 3 months to 1 month)	Zone Heads and Research and Monitoring staff of RDB	9	-	9	-
ANICO capacity need assessment workshop for ANICO concept revision	To assess the capacity of ANICO to perform duties according to revised ToR's	A clear vision for the revision of the ANICO network produced	53 ANICO (from each cell surrounding NNP)	81	9	39	33
Meeting on fire fighting & prevention with local leaders/security forces at Gisakura & Kitabi	To put in place a clear system of planning for fire-fighting coordination	Clear and effective communication in the event of wild fire occurrence	Police, Army, District representatives and RDB	91	-	16	75
Fire fighting education meeting with NNP user associations	To build awareness and understanding related to the risks to Nyungwe posed by fire	User associations play a more active role in fire management	Representatives of bee-keepers and ex-poachers	77	29	48	-
Sensitization meeting with Bweyeye marginalized people	To build awareness and understanding related to the risks to Nyungwe posed by fire	Bweyeye community play a more active role in fire management	68 community representatives	68	31	37	-

PES methods & Project development with focus on carbon markets	To build capacity in relation to the PES approach, carbon stock assessment etc	Participants able to develop their own outlines for PES projects	Representatives from various Ministries, local government, Universities, NGO's etc	21	3	18	-
Basic training for Animatuer de Conservation (ANICO)	To provide overall guidance to all ANICO based on the revised ToR's	All ANICO clear of their responsibilities and roles	52 ANICO	52	8	44	-
Chimp training: improving tourist experience & guide interpretation skills	To provide essential refresher training in order to improve the visitor experience	Improved chimpanzee tourism experience	All NNP chimpanzee guides and trackers	25	-	25	-
Training PES - Watershed Modeling for PES partners in Rwanda	To build capacity in the modeling and valuation of hydrological resources	Improved understanding of hydrological modeling & its application	Government, NGO, researchers etc from the region	40	6	34	-
Conflict Sensitive conservation training with IISD	To build capacity in relation to standard conflict resolution skills	Participants able to use at least 2 different conflict resolution tools	Senior RDB staff, District representatives and ANICO	22	3	19	-
Refresher training on RBM data collection for RDB Guards	To provide basic training on RBM use and navigation in particular	New rangers able to use RBM for monitoring law enforcement effectiveness	38 park rangers (including 24 new recruits)	38	3	35	-
Training for school survey (students attitude, knowledge, behavior re: conservation of NNP)	Training provided for ARECO staff members to facilitate survey work with schools	ARECO staff able to both administer and analyze school surveys	4 ARECO staff	4	1	3	-
Stakeholders training on education strategy development	To develop shared capacity to plan and implement the education & outreach strategy	Joint understanding of the Nyungwe education & outreach strategy	School teachers, district and ANICO representatives and NGO partners	27	7	20	-
Training on general Nyungwe tourism Impact monitoring	To develop capacity related to assessing general tourism impacts in Nyungwe	General tourism impacts evaluated for Nyungwe	3 Senior Nyungwe Wardens	3	-	3	-
Basic Monitoring and Evaluation training for agreement management	Basic training on USAID favored M&E approaches	Improved M & E of WCS	WCS M & E Manager	1	-	-	-

F) CROSS-CUTTING ISSUES

• Environmental Compliance

In overall, most of the project activities implemented during the Y2 of the project did not have any direct impact on the environment per se, but on the contrary, have strengthened the capacity to reduce the threats / negative impacts on park biodiversity and to design actions for counteracting those threats and help to reverse the trends.

As far as trainings and workshops were concerned, considerations of environmental sustainability and environmental stewardship were incorporated in the discussions where appropriate and to the extent possible. Trainees have been introduced to these notions and appreciated it.

With regard to the construction of the Gahurizo ranger post, an ERF was completed and the construction activities are being conducted in a manner consistent with the good design and implementation practices as per RDB and USAID guidelines and approval.

• Gender

The integration of gender is a challenge as there was no gender analysis done before the initiation of the program. This would have helped to gather and analyse information on gender differences and social relations to identify and understand the different roles, divisions of labour, resources, constraints, needs, opportunities/capacities and interests of men and women in relation to biodiversity conservation in the context of Nyungwe National Park.

Although most of the project related activities were dominated by men and this is evidenced by meetings attendance, the project consistently encouraged the participation of women. For the few who participated especially in meetings and workshops, their views were equally valued as the men's ones.

It is in this regard, that for example the baseline survey for the Outreach strategy was conducted to ensure that the views of an equal number of men and women were captured. Also, the Revenue sharing review process is aimed at addressing possible inequities in benefit sharing and will also consider gender as a factor.

- **Sustainability aspects**

The three main tenets of sustainability are ecological, social and financial sustainability. All three are core to the Project goal; long-term sustainability is, therefore, central to this project which aims to strengthen NNP management capacity and develop the potential of NNP to directly benefit Rwandans, with focus communities adjacent to the park.

Ecological sustainability has been assured with the focus on actions aiming at threats mitigation and monitoring of NNP wildlife and natural systems. Social sustainability has been addressed through engagement of local communities, both through alternative livelihoods, innovations in natural resource use, and the education activities proposed. The project also seeks to make local communities more aware of how they benefit from the forest and in this way they can become protectors of the forest and advocates to government for its protection.

Financial sustainability has been addressed through a suite of PES and market-based mechanisms; by considering a basket of sustainably extracted ecosystem goods and services, the risk associated with reliance on a single funding source subject to the vagaries of market demand, and the fact that revenue streams for different goods and services fluctuate seasonally and inter-annually, is diminished. Alternatively, improved revenue sharing mechanism, boosted by additional income from tourism will also play significant role in ensuring financial as well as social sustainability for NNP conservation.

G) SUMMARY OF YEAR 3 ACTIVITIES

Strategy I: Strengthening RDB's Biodiversity and Threats Monitoring Capacity

Outputs	Activities	Period	Staff	Partners	Indicator	Target
I.1: Biological Surveying capacity of RDB Staff is strengthened	Train RDB staff in research/survey design, data management and analysis.	May 2012	Tim/Felix/ Nicolas	RDB/KCCE M	# of people receiving USG supported training in natural resources management and/or biodiversity conservation.	62 rangers trained in nat. resource mangt / biological conservation in year 3
	Produce/secure training manuals to provide guidance on research protocols and data management	March – June 2012	Tim/Felix/ Nicolas	RDB		1 training manual produced
I.2: The Capacity in Park Protection and threat monitoring and assessment for RDB staff is strengthened	Continue to build the capacity of Zone Heads and other senior Rangers in the use of RBM/MIST (patrol planning, data entry, data analysis, data transfer)	March 2012 to February 2013	Felix, Nicolas	RDB/KCCE M	% RDB patrols guided by analysis of MIST data # illegal activities detected per ranger-month monitoring effort	30% 0.31/km walked
	Train trainers for implementing the Kinyarwanda version of the training manual for Ranger Based Monitoring.	May 2012	Felix, Nicolas		# of people receiving USG supported training in natural resources management and/or biodiversity conservation.	205 people trained in total for this indicator in year 3
I.3: Capacity to monitor and model climate is strengthened, and baseline assessment completed	Training for RDB staff in climate change monitoring through the installation of a climate monitoring station in Nyungwe (this is a follow-up to training held in Year 1)	May 2012	Anton Seimon	RDB	# of people receiving USG supported training in global climate change (including Framework Convention on Climate Change, greenhouse gas inventories, mitigation and adaptation analysis and climate monitoring)	25 trained

Strategy II: RDB and Districts' capacity to manage conflict, mitigate threats and manage tourism is strengthened

Outputs	Activities	Period	Staff	Partners	Indicator	Target
II.1: Capacity to understand, manage and resolve conflicts is in place	Training for park rangers in conflict resolution	May 2012	Claudine and Eugene	RDB, IISD	# of people receiving USG supported training in natural resources management and/or biodiversity conservation	41 trained by end year 3
	Training for ANICO and DEO's in conflict resolution in support of developing a conflict resolution plans and a 'task-force' at sector level.	August 2012	Claudine and Eugene	RDB, IISD		31 trained by end year 3
II.3: Capacity to manage fire, and monitor mining and resource use impacts are in place	Organize and facilitate trans-boundary quarterly coordinated planning and patrols with Burundian counterparts	March, June, September 2012 and January 2013	Fidele	RDB, INECN	# of coordinated Nyungwe-Kibira RBM patrols	3
	Pilot methods to remove ferns at a larger scale / reduced cost as part of forest assisted regeneration in the areas affected by fire	March 2012-February 2013	Nicolas	RDB	# of hectares in areas of biological significance showing improved biophysical conditions as a result of USG assistance	9 ha recovered by end year 3 At least 2 new fern clearance methods piloted
II.4: Tourism impact monitoring program supports adaptive mangt of tourism program	Assist with the development and dissemination of a code of conduct for primate tourism	Aug 2012	Nicolas	RDB	# of primate tourism guidelines adopted by RDB	1 guideline produced and adopted by the end of year 3

Strategy III: Strengthening the knowledge and interest of the Government of Rwanda to develop and support PES policies

Outputs	Activities	Period	Staff	Partners	Indicator	Target
III.1: The Government of Rwanda has the knowledge and interest in establishing effective PES policies that fully support	Preparation of a policy brief on the importance of ecosystems to Rwanda to inform the revision of Post 2012 EDPRS	April 12	Mediatrice and Michel	REMA, RDB	# of relevant PES policies, regulations drafted and implemented	Policy brief completed in year 3 as step towards PES policy in year 4
	Workshops with major water users	September 12	Media	REMA, RDB	# of agreements to allow for payment for watershed services signed	Workshop held

implementation of PES schemes and ensure that values equitably accrue to both government and communities.	(private sector essentially)					as step towards signing agreement in year 4
III.2 RDB has the capacity to develop a comprehensive revenue sharing policy	Development of new criteria for revenue sharing	May 12	Fidel	RDB, Districts	# of revenue sharing guidelines revised and put into effect	1 new revenue sharing policy put into effect in year 3
	Facilitate the establishment of mechanism for monitoring and implementation of revenue sharing projects	May 12	Fidel	RDB, Districts		

Strategy IV: Develop (design and implement) a system of payments for ecosystem services (PES)

Outputs	Activities	Period	Staff	Partners	Indicator	Target
IV.1: Payment mechanisms for ecosystem services designed, with an emphasis on watershed services and forest-carbon	Develop a Project Design Document (PDD) for small-holder tree planting as a land use strategy and carbon stock	September 2012	Mediatrice	ECOTRUST, REMA, RDB, district	Number of carbon PES projects assessed and implemented	1
	Identify and build capacity of ADENYA and farmers' cooperatives	June and September 2012 and Feb 2013	Mediatrice	ECOTRUST, REMA, RDB and Districts	Number of government staff, civil society & private sector employees trained in PES design with USG support	4

Strategy V: Develop Sustainable Alternatives for Resource Use

Outputs	Activities	Period	Staff	Partners	Indicator	Target
V.1: Improved energy efficiency in villages around Nyungwe from introduction of fuel efficient stoves and alternative fuel sources	Actively promote the adoption of energy efficient stoves in target communities	March-July 2012	Eugene, Fidele and Vincent	REDO, RDB	% of 200 pilot households with reduced fuel-wood consumption	50% of 200 households have reduced fuel-wood consumption by end year 3.

	Rapid evaluation of the existing bamboo projects in Nyaruguru district, identify and source suitable seedlings and develop a scheme of seedling distribution under agreement with local farmers in the Nshili area	March 2012 – Feb 2013	Madelaine, Vincent	Rwanda Bamboo Society, Rwandan Natural Resource Authority, RDB	# of households signing agreements and obtaining bamboo from woodlots	Year 3 is building towards signing agreements in year 4
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Strategy VI: Implement Education and Outreach Programs

Outputs	Activities	Period	Staff	Partners	Indicator	Target
VI.1: Students in formal education (primary and secondary) will adopt a positive/supportive attitude to park conservation efforts based on a clear understanding of the multiple values of NNP, reduce the adoption of unsustainable behaviors as they grow into adults, and act as advocates for the value of the Park and its conservation	Hold teacher training workshop to train teachers in use of materials and activities and distribute materials to schools	Oct- 2012	Claudine, Eugene	RDB, ARECO	# of target students participating in the program with USG assistance # of people receiving USG supported training in natural resources management and/or biodiversity conservation	2,000
	Monitor and support use of education materials in schools	Oct 2012 to Feb 2013	Claudine, Eugene	RDB, ARECO		20
VI. 2 : Education Output 2: Vulnerable groups (community members responsible for threat behaviours in NNP) adopt a supportive attitude to the park and change their behavior based on understanding of the multiple values of NNP	Hold training of trainers in support of dissemination of outreach materials	Oct- 2012	Claudine, Eugene	RDB, ARECO	# of people receiving USG supported training in natural resources management and/or biodiversity conservation	58
	Implement and monitor conservation education and outreach (social marketing) programs for communities near NNP (these may include drama's, competitions etc).	Nov 2012 to Feb 2013	Claudine	RDB, ARECO	# of individuals participating in the program with USG assistance	1,000

ANNEX 1- 24-MONTH HAND-OVER OF RBM PROCESS FROM WCS TO RDB

RBM - MIST HAND-OVER PLAN (2011-2013)

Actions	Activities	Who to lead	Who involved	Target	Time-frame							
					Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8
Capacity Building:	Develop MIST/GIS manuals / protocols	Felix	Partners	Training manual and data collection protocol completed		x	x					
	RBM / MIST training for RDB Wardens- Protection & research & monitoring	Felix	Partners	Complete familiarity with all aspects of MIST/GIS		x		x		x		
	RMB/MIST training for Zone heads	Felix	Partners	Familiarity with all aspects of MIST/GIS and able to train those below		x		x		x		
	GIS training for 4-6 key RDB staff for MIST	Felix	Partners	Confidence with analysing MIST data further in GIS using protocols								
	Training at zone level for basic data analysis and transfer to Kitabi	Felix	Partners	2 people minimum at each zone able to download, clean & send data to Kitabi		x		x		x		
	Training for use of solar chargers for GPS batteries	Felix	Partners	At least 4 people at each post able to effectively use GPS batteries			x				x	
	Training (mentoring) on monthly, quarterly and annual report production for RBM / MIST	Felix	Partners	At least 6 key RDB protection / R & M staff compile reports from templates	x	x	x	x	x	x	x	x
	Refresher training course on RBM data collection	Felix	Partners	At least 4 people from each patrol post are able to collect RBM data with minimum errors		x		x		x		
	General capacity building for key RDB Kigali staff on MIST/GIS	RDB	Partners	General familiarity with hardware, software and protocols					x			
	Support quarterly meeting with key partners	RDB	Partners	RBM results are used for park management	x	x	x	x	x	x	x	x
	Insure Databases from stand alone PCs in patrol zones are synchronised with the central MIST database (at HQ) through database replication	Felix	Partners	MIST database for NNP is well maintained			x	x	x	x	x	x
	Create an information network linking the departments of R&M and other departments at park level	RDB	Partners	Information for RBM data accessed by key users at Park level			x		x			
	Insure feed-back to rangers on how the data they collect are being used for park management	RDB	Felix/WCS		x	x	x	x	x	x	x	x
Hardware/software provision:	Provision of improved GPS units and carry cases	Aaron	RDB	All ranger posts have updated GPS units and cases		x						
	Assess power and communication possibilities at zonal HQ's	RDB		Overview obtained to guide hardware/software introduction		x						
	Provide basis 3 computers (MIST GIS installed) and wireless modems for basic data analysis & transfer, serial port cables (for PC desktops) and or serial port adapter for laptops	Aaron	Partners	Zonal offices all equipped for basic data download, cleaning & transfer		x						
	Provision of solar charging units & rechargeable batteries for each ranger post for GPS	Aaron	Partners	Ranger posts all equipped with solar charging equipment		x						
Evaluation:	Progress evaluation of MIST/GIS at all level at park level			MIST/GIS is effectively used for RBM data management				x				x